

## Claims

1. A fuel injection system for internal combustion engines, having a fuel injection nozzle (2), which can be supplied with fuel by a high-pressure fuel source (1), which fuel injection nozzle has a movable nozzle piston (3) for opening and closing injection openings (6), an injection nozzle high-pressure chamber (21), and an injection nozzle control chamber (20), and a pressure boosting device (7) is connected between the fuel injection nozzle (2) and the high-pressure fuel source (1) and has a movable pressure booster piston (8), a pressure booster work chamber (11), and a pressure booster high-pressure chamber (9), characterized in that a filling connection (10) which is open for filling the pressure booster high-pressure chamber (9) when the fuel injection nozzle (2) is closed is itself closed when the fuel injection nozzle (2) is open.

2. The fuel injection system of claim 1, characterized in that the filling connection (10) is closed by the nozzle piston (3) when the fuel injection nozzle (2) is open.

3. The fuel injection system of claim 1, characterized in that a pressure change in a pressure booster control chamber (12) contained in the pressure boosting device (7)

and/or in the pressure booster work chamber (11) causes a pressure change in the pressure booster high-pressure chamber (9).

4. The fuel injection system of claim 1, characterized in that the opening and closing of the injection openings (6) are controllable via a control valve (14).

5. The fuel injection system of claim 1, characterized in that the filling connection (10) is located between the pressure booster high-pressure chamber (9) and the injection nozzle control chamber (20).

6. The fuel injection system of claim 1, characterized in that the filling connection (10) has a throttle (23).

7. The fuel injection system of claim 1, characterized in that the high-pressure fuel source (1) communicates during the injection, via a high-pressure line (27), with the pressure booster work chamber (11) contained in the pressure boosting device (7).

8. The fuel injection system of claim 1, characterized in that the filling connection (10) is closable by the cooperation of the nozzle piston (3) with a sealing seat (26).

9. The fuel injection system of claim 1, characterized in that a sealing seat (26) is embodied on the nozzle piston (3) and cooperates with a pressure piece (45) for closing the filling connection (10).

10. The fuel injection system of claim 1, characterized in that the filling connection (10) is embodied in the nozzle piston (3).

11. The fuel injection system of claim 1, characterized in that the injection nozzle control chamber (20) is located in the pressure booster piston (8), which is embodied as a hollow piston.

12. The fuel injection system of claim 3, characterized in that the pressure booster high-pressure chamber (9) communicates, when the fuel injection nozzle (2) is closed, with the high-pressure fuel source (1) via a control valve (14) (in a first switching position (15)), the pressure booster control chamber (12), the injection nozzle control chamber (20), and the filling connection (10).

13. The fuel injection system of claim 3, characterized in that when the fuel injection nozzle (2) is opening and is open, the pressure booster control chamber (12) and the injection nozzle control chamber (20) communicate with a low- pressure line (17).

14. The fuel injection system of claim 3, characterized in that when the fuel injection nozzle (2) is closed, the pressure booster high-pressure chamber (9), via the filling connection (10), and via the injection nozzle control chamber (20), the pressure booster control chamber (12) and the pressure booster work chamber (11) communicate with at least one low-pressure line (17, 48, 49).